It is useful to know this, for two reasons. First, to become satisfied that the nature of the superincumbent soil cannot in any case be expected to partake of that of the underlaying stratum of marl; hence it is never found to contain calcareous particles. Secondly, to understand the cause of the variety in the ingredients with which the marl is associated; thus we find the shells sometimes enveloped in clay, at other times in sand, and then again in a mixture of sand and clay, these two ingredients being in very variable proportions.

Now, although the marl does not influence the nature of the soil lying over it, the latter frequently greatly modifies the quality of the marl beneath it. The cause of this is apparent. The superincumbent earth (understanding thereby the whole mass of materials covering the marl) consists either of clay, gravel or sand, or a mixture of all these; and having, it is presumed, been deposited upon the marl subsequent to its formation, it will, from a variety of causes, have become mixed with it. It is, however, more especially by infiltration that the marl becomes modified in consequence of the condition of the soil above it. If the latter contain fine particles of sand, as is very commonly the case, these will be taken up by the waters that traverse the soil, and so charged, will penetrate more or less deeply into the marl bed. Should the shells there be loosely scattered in their mineral envelope, which is also frequently sand, the whole of their calcareous particles may be dissolved and become replaced by a silicious deposite. The bed of fossils will in this case, at least in its upper portions, exhibit an accumulation of indurated *casts* alone of shells. Such is the case in many places on Chew's island, in some of the fossil deposites of Skipton creek, and in several places on the Wye. It is evident that then the material cannot be used as marl. When again, the superincumbent soil is ferruginous, it very generally happens that the shells are bound together by an argillo-ferruginous cement extremely hard, which unfits them for use not only in this respect, but also by substituting for the calcareous ingredient which they originally contained a predominating constituent of oxide of iron, which cannot be beneficial to the soil.

It must be borne in mind, however, that this sort of disnaturing of the shell marl is most generally confined to the upper portions of the deposite. Hence, if in the search after marl, those silicious or ferruginous incrustations are met with, they should always be removed to ascertain the nature of the mate-